

Evaluation Matrix for Rangeland Health

State: OK Office _____ Ecological Site: Heavy Bottomland (Eastern)

Site ID: 112AY045OK

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	Departure from Ecological Site Description/Ecological Reference Worksheet				
Indicator	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills*	Active eroding rills are common. Headcutting on rills is active. Few, if any, of the sides are covered with vegetation. Rills merge to form conductive channels for water erosion.	There is a presence of rills. Headcutting on most rills is active, and few of the sides are covered with vegetation.	There is a presence of rills. Headcutting on some rills is active, and most of the sides are covered with vegetation.	There is a presence of rills. There is no active headcutting, but a portion of the sides are not covered with vegetation.	Ecological Reference Worksheet: None
2. Water Flow Patterns *	Water eroded channels are numerous and extensive. Most channels have signs of headcutting and actively eroding bottom channels.	Water flow patterns are visible in the soil surface. Headcutting and/or deposition are common in the water flow channels.	Water flow patterns are visible in vegetation but not in soil. Water tends to flow in channels rather than evenly over the ground.	Some water flow patterns are found in the vegetation but not in the soil. The general flow of the water is distributed evenly over the landscape.	Ecological Reference Worksheet: Flow patterns may be apparent after a flood event from out of bank flow.
3. Pedestals and/or Terracettes	Abundant active pedestalling (> 1 inch) and terracettes common. Many rocks and plants are pedestalled; exposed plant roots are common.	Moderate active pedestalling (.5 – 1 inches); terracettes common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling (<.5 inches); most pedestals are in flow paths and interspaces. Occasional terracettes present.	Some evidence of past pedestal formation, especially in water flow patterns. No evidence of terracettes.	Ecological Reference Worksheet: There should not be any evidence of erosional pedestals or terracettes on this site.
4. Bare Ground	Much higher (>15%) than expected for the site. Bare areas are large and generally connected.	Moderate to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher (5-10%) than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Ecological Reference Worksheet: <2% bare ground
5. Gullies	Common with indications of active erosion and down cutting; vegetation is infrequent on slopes and/or bed. Nick points and headcuts are numerous and active.	Moderate in number to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; down-cutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Vegetation is stabilizing the bed and slopes; no signs of active headcuts nick points, or bed erosion.	Ecological Reference Worksheet: None.

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6. Wind Scoured, Blowout and/or Depositional Areas	None	None	None	None	Ecological Reference Worksheet: None.
7. Litter Movement (wind or water)	Extreme; concentrated around obstructions. Most size classes of litter have been displaced. (>24")	Moderate to extreme; loosely concentrated near obstructions. Moderate (stems, seedheads) to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions. (12-18")	Slightly to moderately more than expected for the site with only small size classes (leaf litter) of litter being displaced.	Ecological Reference Worksheet: Minimal. Short distance movement. Only litter movement would be during high intensity storms with out of bank flow. Some litter will lodge against other plants and debris.
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent. Stability Scores <3	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Stability scores of 4's and 5's	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Ecological Reference Worksheet: Stability Scores of 6. Stability scores based on minimum 6 samples tested.
9. Soil Surface Loss or Degradation	Soil surface horizon nearly absent to absent (<25% of A horizon in place). Soil structure near surface is similar to, or more degraded, than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss (50-75% of A Horizon still in Place) or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded (more blocky structure) and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation (increased platy structure) especially in plant interspaces.	Ecological Reference Worksheet: A1: 0 to 7 inches; very dark grayish silt loam, moderate, medium granular structure. A2: 7 to 20 inches; gray silt loam, weak, fine granular structure. B2t: 20 to 36 inches; gray, silty clay, moderate medium blocky structure.
10. Plant Community Composition & Distribution Relative to Infiltration & Runoff	Infiltration is severely decreased due to adverse changes in plant community composition (Shrubs Dominate) and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition (Increased Trees, decrease grasses) and/or distribution (increased plant interspaces). Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Ecological Reference Worksheet: Infiltration and runoff are not affected by any changes in plant community composition and distribution (perennial grasses and trees).

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11. Compaction Layer (below soil surface)	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately wide-spread, moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	Ecological Reference Worksheet: None to minimal.
12. Functional/ Structural Groups (F/S Groups) See Functional/ Structural Groups Worksheet	Others now dominant (>40%)	Number of F/S groups reduced AND/OR One dominant group and/or one or more sub-dominate group replaced by F/S groups not expected for the site AND/OR Number of species within F/S groups significantly reduced.	Subdominants > Dominants > Other	Number of F/S groups slightly reduced AND/OR Relative dominance of F/S groups has been modified from that expected for the site AND/OR number of species within F/S slightly reduced.	Ecological Reference Worksheet: This site is made up of a plant community described as the Historic Plant Community in the range or ecological site descriptions. Dominants (>40%): Tallgrasses Midgrasses Subdominants (10-40%): Cool season grasses/grasslikes, forbs. Other (<10%): Trees, Shrubs, annuals
13. Plant Mortality/ Decadence	Dead and/or decadent plants are common (>10%).	Dead plants and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present (5-10%).	Slight plant mortality and/or decadence.	Ecological Reference Worksheet: Plant mortality and decadence < 5%, particularly in the absence of fire and herbivory.
14. Litter Amount	Largely absent relative to site potential and weather. <65% coverage with Minimal depth <1/2" OR Too much litter >5"	Greatly reduced relative to site potential and weather.	Moderately more or less relative to site potential and weather. 75-85% coverage with Minimal depth ~ 1" OR Too much litter >3"	Slightly more or less relative to site potential and weather.	Ecological Reference Worksheet: Litter should be >95% coverage with accumulations 1-3 inches.
15. Annual Production	Less than 20% of potential production for the site based on recent weather.	20-40% of potential production for the site based on recent weather.	40-60% of potential production for the site based on recent weather.	60-80% of potential production for the site based on recent weather.	Ecological Reference Worksheet: Normal production is 4000 – 7000 pounds per year.
16. Invasive Plants	Dominate the site (Woody species >30% canopy; Herbaceous >40% composition by weight)	Common throughout the site.	Scattered throughout the site (Woody species 5-10% canopy; Herbaceous 10-25% composition by weight)	Occasional within the site. Invasives would include non-natives, and eastern red cedar.	Ecological Reference Worksheet: No invasive species.

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17.Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced. (<25% as compared to what should be expected).	Capability to produce seed or vegetative tillers is greatly reduced. (25-50% as compared to what should be expected).	Capability to produce seed or vegetative tillers is moderately reduced (50-75% as compared to what should be expected).	Capability to produce seed or vegetative tillers is slightly reduced (>75% as compared to what should be expected).	Ecological Reference Worksheet: All species capable of producing seed or vegetative tillers.